Mutagenic Evaluation of Compound FDA 73-76 **Potassium Carbonate**
6/30/75

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LBI PROJECT #2468

MUTAGENIC EVALUATION OF

COMPOUND FDA 73-76

000584087

POTASSIUM CARBONATE

SUBMITTED TO

FOOD AND DRUG ADMINISTRATION
DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
ROCKVILLE, MARYLAND

SUBMITTED BY

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JUNE 30, 1975

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EVALUATION SUMMARY

Compound 73-76, Potassium Carbonate, did not exhibit genetic activity in any of the *in vitro* microbial assays employed in this evaluation.

DATE: June 30, 1975

SPONSOR: Food and Drug Administration, Contract Number 223-74-2104

SUBJECT: Evaluation of Test Compound 000584087 Potassium Carbonate FDA 73-76

I. OBJECTIVE

The objective of this study was to evaluate the test compound for genetic activity in microbial assays with and without the addition of mammalian metabolic activation preparations.

II. MATERIALS

A. Test Compound

1. Date Received: August, 1974
2. Description: White granular solid

B. Indicator Microorganisms

The following strains of indicator microorganisms were used in the evaluation:

Yeast Strain: Saccharomyces cerevisiae, strain D4

Bacteria Strains: Salmonella typhimurium, strains: TA-1535
TA-1537
TA-1538

C. Reaction Mixture

The following reaction mixture was employed in the activation tests:

Component	Final Concentration/ml
1. TPN (sodium salt)	6 µM
2. Isocitric acid	49 µM
3. Tris buffer, pH 7.4	28 µM
4. $MgCl_2$	1.7µM
5. Tissue homogenate fraction	72 mg

D. Tissue Homogenates and Supernatants

The tissue homogenates and 9,000 x g supernatants were prepared from tissues of the following mammalian species: Mouse-ICR random bred adult males; rat-Sprague-Dawley adult males; and primate-Macaca mulatta adult males.

E. Positive Control Compounds

Table 1 lists chemicals for positive controls in the direct and activation assays.

TABLE 1

POSITIVE CONTROLS USED IN DIRECT AND ACTIVATION ASSAYS

Assay	Chemical[a]	Solvent	Probable Mutagenic Specificity
Nonactivation	Ethyl methanesulfonate	Water or saline	BPS[b]
	2-Nitrofluorene	Dimethylsulfoxide[c]	FS[b]
	Quinacrine mustard	Water or saline	FS[b]
Activation	Dimethylnitrosamine	Water or saline	BPS[b]
	2-Acetylaminofluorene	Dimethylsulfoxide[c]	FS[b]

[a] Concentrations given in the Results Section
[b] BPS = base-pair substitution; FS = frameshift
[c] Previously shown to be non-mutagenic

III. METHODS

A. Toxicity

The solubility, toxicity and doses for all chemicals were determined prior to screening.

Each chemical was tested for survival against the specific indicator strains over a range of doses to determine the 50% survival dose. Bacteria were tested in phosphate buffer, pH 7.4, for one hour at 37°C on a shaker. Yeasts were tested in phosphate buffer, pH 7.4, for four hours at 30°C on a shaker. The 50% survival curve and the 1/4 and 1/2 50% doses calculated.

If no toxicity was obtained for a chemical with a given strain, then a maximum dose of 5% (w/v) was used against the strain.

Unless otherwise specified, the doses calculated for the tests in buffer were applied to the activation tests. The solubility of the test chemical under treatment conditions is stated in the Results Section.

B. Plate Tests

In the nonactivation procedure, approximately 10^9 cells of a log phase culture of the bacterial indicator strains were spread over the surface of a minimal plate, and a measured amount of the test chemical was placed in the center of the test plate. In activation tests, the test chemical was added to the cells, and an aliquot of the mixture was spread on the surface of the test plate. The reaction mixture (0.1 ml) plus tissue extract was then spotted on the surface of the plate. Positive and solvent controls were included. All plates were incubated at 37°C for four days and then scored. Each compound (Test, Positive Control and Solvent Control) was done in duplicate. Concentrations of the positive control compounds are listed in the Results Section.

C. Suspension Tests

1. Nonactivation

Log-phase bacteria and stationary-phase yeast cultures of the indicator organisms were grown in complete broth, washed and resuspended in 0.9% saline to densities of 1×10^9 cells/ml and 5×10^7 cells/ml, respectively. This constituted the working stock for tests of a group of test chemicals and their respective controls. Tests were conducted in plastic tissue culture plates. Cells plus appropriate volume(s) of the test chemical were added to the wells to give a final volume of 1.5 ml. The solvent replaced the test chemical in the negative controls. Treatment was at 30°C for four hours for yeast tests and at 37°C for one hour for bacterial tests. All flasks were shaken during treatment. Following treatment, the plates were set on ice. Aliquots of cells were removed, diluted in sterile saline (4°C) and plated on the appropriate complete media. Undiluted samples from flasks containing the bacteria were plated on minimal selective medium in reversion experiments. Samples from a 10^{-1} dilution of treated cells were plated on the selected media for enumeration of gene conversion with strain D4. Bacterial plates were scored after incubation for 48 hours at 37°C. The yeast plates were incubated at 30°C for 3-5 days before scoring.

2. Activation

Bacteria and yeast cells were grown and prepared as described in the nonactivation tests. Measured amounts of the test and control chemicals plus 0.25 ml of the stock-cell suspension were added to wells of the Linbro plate containing the appropriate tissue fraction and reaction mixture. All flasks (bacteria and yeast) were incubated at 37°C in an oxygen atmosphere with shaking. The treatment times as well as the dilutions, plating procedures and scoring of the plates were the same as described for nonactivation tests.

D. Preparation of Tissue Homogenates and 9,000 x g Cell Fractions

Male animals (sufficient to provide the necessary quantities of tissues) were killed by cranial blow, decapitated and bled. Organs were immediately dissected from the animal using aseptic techniques and placed in ice-cold 0.25 M sucrose buffered with Tris at pH of 7.4. Upon collection of the desired quantity of organs, they were washed twice with fresh buffered sucrose and completely homogenized with a motor-driven homogenizing unit at 4°C. The whole organ homogenate obtained from this step was divided into two samples. One sample was frozen at -80°C and the other was centrifuged for 20 minutes at 9,000 x g in a refrigerated centrifuge. The supernatant from the centrifuged sample was retained and frozen at -80°C. These two frozen samples were used for the activation studies.

E. Data Recording and Reporting

Following the specified incubation periods all population plates were scored by an automatic colony counter and the results from each plate of a set were recorded, in ink, on data processing forms. All minimal or other types of selective media plates were hand scored and the results recorded along with the respective population data. Other relevant experimental data were recorded on experimental definition forms. For bacteria strains the number of colonies recorded from either the population or selective plates represents that number in 1 ml of test suspension plated. The numbers recorded for the yeast strain D4 represent the number in 0.5 ml of test suspension plated. The data were then processed and printed from a computer program.

IV. RESULTS SECTION

A. Solubility Properties of the Test Compound

1. Name or code designation of the test compound: 000584087
Potassium Carbonate

2. Test solvent: Saline

3. Solubility of the test compound under treatment conditions:
Soluble under treatment conditions

4. Additional comments: White granular solid

B. Toxicity and Dosage Determinations for the Test Compound

1. Test date for toxicity determination: April 11, 1975

2. The 50% survival level was determined for bacteria and yeast indicator organisms by conducting survival curves with the test compound at the following concentrations:

Percent Concentration (w/v or v/v)

10.0
1.0
0.1
0.01
0.001

3. Concentrations of the test compound used in the mutagenicity tests:

Dose	Percent Concentration	
	Bacteria	Yeast
1/4 50% Survival	0.075	0.7
1/2 50% Survival	0.150	1.4
50% Survival	0.300	2.8
Plate Tests	0.150	--

V. SUMMARY OF TEST RESULTS

Plate Tests

A. Name or code designation of the test compound: 000584087

B. Test date: April 25, 1975

C. Concentration of the test compound: 0.15%

Test	Species	Tissue	REVERTANTS/PLATE TA-1535 1	TA-1535 2	TA-1537 1	TA-1537 2	TA-1538 1	TA-1538 2
1. Non-activation								
Solvent Control	---	---	40	41	11	13	27	23
Positive Control[a]	---	---	>10^3	>10^3	183	113	98	120
Test Compound	---	---	54	14	16	17	20	29
2. Activation								
Negative Control	---	---	8	12	7	7	6	18
Solvent Control	---	---	13	4	15	16	23	21
Reaction Mixture Control	---	---	7	10	8	8	10	18
Positive Control[b]	Mouse	Liver	>10^3	>10^3	41	43	307	420
Positive Control		Lung	11	13	5	12	72	30
Positive Control		Testes	9	11	22	10	19	22
Positive Control	Rat	Liver	>10^3	>10^3	41	45	327	340
Positive Control		Lung	12	9	7	7	26	29
Positive Control		Testes	9	11	16	10	14	11
Positive Control	Monkey	Liver	390	329	44	41	363	310
Positive Control		Lung	11	9	7	10	21	24
Positive Control		Testes	9	12	16	6	17	12
Test Compound	Mouse	Liver	13	13	15	15	15	15
Test Compound		Lung	11	22	5	7	22	18
Test Compound		Testes	35	21	9	9	21	24
Test Compound	Rat	Liver	13	13	11	15	14	16
Test Compound		Lung	13	22	5	9	23	18
Test Compound		Testes	34	25	12	10	23	24
Test Compound	Monkey	Liver	16	12	14	18	13	20
Test Compound		Lung	12	22	8	10	25	19
Test Compound		Testes	32	22	13	8	20	18

a TA-1535 EMS 10 µl/plate
TA-1537 QM 20 µg/plate
TA-1538 NF 100 µg/plate

b TA-1535 DMNA 50 µM/plate
TA-1537 AAF 100 µg/plate
TA-1538 AAF 100 µg/plate

DATA TABLE TERMS AND ABBREVIATIONS

ABBREVIATION OR TERM	DEFINITION OR EXPLANATION
COMPOUND	Client designated compound number appears in this column.
TEST CODES	NAN = Nonactivation: Solvent Control NAP = Nonactivation: Positive Control NA1 = Nonactivation: Test Compound Dose 1 NA2, etc. = Reflects the other dose level(s) A+C = Negative Chemical Control A-C = Activation: Solvent Control ACP = Activation: Positive Control ACT = Activation: Test Compound A+T = Activation: Tissue Control LI = Liver Tissue Activation Fraction LU = Lung Tissue Activation Fraction KI = Kidney Tissue Activation Fraction TE = Testes Tissue Activation Fraction 1,2, etc. = Dose Levels
CONCENTRATION	All test compound dose levels are expressed as a whole number followed by an exponent (negative) identified by the appropriate units. Example: 0025-2PCT = 0.25 percent concentration
POPU	Total number of viable cells in the plating sample raised to some exponent printed directly below the abbreviation (i.e., EP + 6 = x 10^6).
MUT 1	Total number of mutants or convertants obtained from the sample plated raised to some exponent printed directly below the abbreviation (i.e., EP + 0 = 10^0). For strain D4, MUT 1 represents the number of ADE+ convertants.
MUT 2	Only used for strain D4 and represents the number of TRY+ convertants in the plated sample.
FREQ 1	The calculated mutation or gene conversion frequency times the negative exponent written directly below. For strain D4, FREQ 1 represents the ADE+ value.
FREQ 2	Only used for strain D4 and represents the TRY+ conversion frequency.
CONTAM	Presence of contamination on any plates.

DATA TABLE TERMS AND ABBREVIATIONS (continued)

ABBREVIATION OR TERM	DEFINITION OR EXPLANATION
AAF	2-Acetylaminofluorene
DMSO	Dimethylsulfoxide
DMN	Dimethylnitrosamine
EMS	Ethyl Methanesulfonate
QM	Quinacrine Mustard
NF	Nitrofluorene
SPECIES	Animal Strains
SPRDAW	Sprague Dawley Rats
ICRFLO	Flow ICR Random Bred Mice
RHESUS	Rhesus Monkey (Macaca mulatta)
MIXEDB	Dog, Mixed Breed
NEWZEA	New Zealand White Rabbit

LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
REPORT EXR34

COMPOUND FREQUENCY SUMMARY REPORT 07/08/75

SPECIES / COMPOUND 000584087

TEST	ORG	TA1535 HIS EX-8	TA1538 HIS EX-8	TA1537 HIS EX-8	0000D4 ADE EX-5	0000D4 TRY EX-5
NAN		17.74	7.58	15.00	1.07	0.93
NAP		2172.28	376.09	666.27	2.08	117.36
NA1		14.81	6.45	8.97	2.84	2.37
NA2		12.64	12.39	9.76	0.86	2.38

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LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
REPORT EXR34

COMPOUND FREQUENCY SUMMARY REPORT 07/08/75

SPECIES ICRFLO/MOUSE COMPOUND 000584087

TEST	ORG	TA1537 HIS EX-8	TA1538 HIS EX-8	TA1537 HIS EX-8	TA1535 HIS EX-8	0000D4 ADE EX-5	0000D4 TRY EX-5
ACT	A+C		18.11	10.20	4.61	2.12	1.52
ACT	A+T		14.08	14.37	9.87	3.14	5.10
ACT	A-C	8.63	7.98	10.54	4.84	2.91	0.83
ACT	PLI		63.82	30.99	1314.89	4.28	5.26
ACT	PLU		15.85	23.64	9.51	2.87	3.05
ACT	PTE		16.82	23.53	14.29	3.92	0.68
ACT	LI1	9.49	8.95	38.14	2.70	3.13	0.89
ACT	LI2	8.71	10.72	80.70	4.57	2.49	0.98
ACT	LU1		8.75	6.15	1.26	2.07	0.41
ACT	LU2		5.70	7.87	0.82	2.98	2.05
ACT	TE1		8.50	13.91	0.60	3.07	2.05
ACT	TE2		7.55	11.93	1.29	2.74	1.31

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LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
REPORT EXR34

COMPOUND FREQUENCY SUMMARY REPORT 07/08/75

SPECIES SPRDAW/RAT COMPOUND 000584087

TEST	ORG	TA1538 HIS EX-8	TA1535 HIS EX-8	TA1537 HIS EX-8	0000D4 ADE EX-5	0000D4 TRY EX-5
ACT	A+C	3.73	2.82	5.33	1.49	2.48
ACT	A+T	6.20	20.67	9.50	3.82	3.65
ACT	A-C	4.15	3.33	4.84	1.61	1.93
ACT	PLI	38.29	819.28	19.72	4.20	4.06
ACT	PLU	5.79	7.73	13.56	5.45	3.23
ACT	PTE	5.65	3.07	10.07	4.09	1.57
ACT	LI1	8.20	1.44	9.97	1.81	0.91
ACT	LI2	7.71	2.61	8.89	8.94	2.98
ACT	LU1	8.55	5.96	2.17	3.31	1.29
ACT	LU2	8.81	4.76	7.65	6.19	1.20
ACT	TE1	9.77	5.79	7.38	2.47	1.14
ACT	TE2	6.16	8.27	9.69	1.02	2.05

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LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
REPORT EXR34

COMPOUND FREQUENCY SUMMARY REPORT 07/08/75

SPECIES RHESUS/MONKEY COMPOUND 000584087

TEST	ORG	TA1535 HIS EX-8	TA1538 HIS EX-8	TA1537 HIS EX-8	0000D4 ADE EX-5	0000D4 TRY EX-5
ACT	A+C	18.01	11.55	9.85	1.35	1.35
ACT	A+T	15.28	16.84	7.78	2.32	1.93
ACT	A-C	10.14	10.94	9.39	0.70	0.17
ACT	PLI	672.50	62.27	31.09	7.67	6.39
ACT	PLU	20.28	6.06	18.71	3.63	1.68
ACT	PTE	9.66	19.29	8.87	1.36	2.87
ACT	LI1	17.03	11.08	15.85	3.28	1.48
ACT	LI2	13.73	11.66	6.72	1.41	0.47
ACT	LU1	7.83	6.31	11.31	1.76	1.03
ACT	LU2	10.84	5.90	18.18	2.00	1.50
ACT	TE1	16.67	8.34	17.11	1.83	0.56
ACT	TE2	9.76	8.93	10.10	3.82	1.27

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VI. INTERPRETATION OF RESULTS AND CONCLUSIONS

Compound 000584087, Potassium Carbonate, was tested for genetic activity in a series of *in vitro* microbial assays with and without metabolic activation. The following results were obtained:

A. *Salmonella typhimurium*

1. Plate tests

At a concentration of 0.15%, 000584087, was not mutagenic for any of the bacterial indicator strains with or without activation.

2. Nonactivation suspension tests

The results of these tests were negative.

3. Activation suspension tests

The results of these tests were negative. The LI1 and LI2 dose with TA-1537 using mouse tissue; were repeated because of increased mutant frequencies probably resulting from low population counts. The repeat tests were negative.

B. *Saccharomyces cerevisiae*

1. Nonactivation suspension tests

The results of these tests were negative. The positive control frequency at the *ade* locus did not indicate activity. No reason was obvious for this lack of response. The *try* locus did respond during the treatment. The test was considered acceptable.

2. Activation suspension tests

The results of these tests were considered to be negative. The LI2 and LU2 doses with rat tissues were slightly elevated at the *ade* locus. The *try* locus was normal which reduce the likelihood that the *ade* locus were induced.

C. Conclusions

The test compound, Potassium Carbonate, did not exhibit genetic activity in the *in vitro* assays employed in this evaluation.

Submitted by:

David Brusick, Ph.D.
Director of Genetics

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APPENDIX

Tabulation of Data

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REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 512705 DETECTOR TA1535 SPECIES / DATE - 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	NAN		SALINE	0248	0044	17.74	2
	NAP		EMS 0.002 %	0267	5800	2172.28	0
000584087	NA1		0015-2 PCT.	0189	0028	14.81	0
000584087	NA2		0075-3 PCT.	0182	0023	12.64	0

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REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 516304 DETECTOR TA1537 SPECIES / DATE - 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	NAN		SALINE	0140	0021	15.00	0
	NAP		QM 1.0 UG/ML	0169	1126	666.27	0
000584087	NA1		0015-2 PCT.	0156	0014	8.97	0
000584087	NA2		0075-3 PCT.	0164	0016	9.76	0

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REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104
EXPERIMENT 512205 DETECTOR TA1538 SPECIES / PROJECT 02468

DATE - 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	NAN		DMSO	0528	0040	7.58	0
	NAP		NF 125 UG-ML	0368	1384	376.09	0
000584087	NA1		0015-2 PCT.	0527	0034	6.45	0
000584087	NA2		0075-3 PCT.	0452	0056	12.39	0

REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 513404 DETECTOR 0000D4 SPECIES / DATE - 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+4	MUT1 EP+1	MUT2 EP+1	FREQ1 EP-5	FREQ2 EP-5	CONTAM
	NAN		SALINE	0750	0008	0007	1.07	0.93	2
	NAP		EMS 1.0 %	0288	0006	0338	2.08	117.36	0
000584087	NA1		0014-1 PCT.	0211	0006	0005	2.84	2.37	2
000584087	NA2		0007-1 PCT.	0463	0004	0011	0.86	2.38	2

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REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 513504 DETECTOR TA1535 SPECIES ICRFLO/MOUSE DATE - 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	A+C		DMN 50 UM/ML	0456	0021	4.61	0
	A+T		***NO MATCH***	0233	0023	9.87	2
	A-C		SALINE	0558	0027	4.84	1
	ACP	LI	DMN 50 UM/ML	0188	2472	1314.89	2
	ACP	LU	DMN 50 UM/ML	0263	0025	9.51	2
	ACP	TE	DMN 50 UM/ML	0287	0041	14.29	2
000584087	ACT	LI1	0015-2 PCT.	0222	0006	2.70	2
000584087	ACT	LI2	0075-3 PCT.	0197	0009	4.57	2
000584087	ACT	LU1	0015-2 PCT.	0478	0006	1.26	2
000584087	ACT	LU2	0075-3 PCT.	0487	0004	0.82	3
000584087	ACT	TE1	0015-2 PCT.	0336	0002	0.60	2
000584087	ACT	TE2	0075-3 PCT.	0311	0004	1.29	2

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REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 515406 DETECTOR TA1537 SPECIES ICRFLO/MOUSE DATE - 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	A+C		AAF 800 UG/ML	0294	0030	10.20	0
	A+T		***NO MATCH***	0167	0024	14.37	3
	A-C		DMSO	0313	0033	10.54	0
	ACP	LI	AAF 800 UG/ML	0071	0022	30.99	2
	ACP	LU	AAF 800 UG/ML	0055	0013	23.64	0
	ACP	TE	AAF 800 UG/ML	0102	0024	23.53	0
000584087	ACT	LI1	0015-2 PCT.	0097	0037	38.14	2
000584087	ACT	LI2	0075-3 PCT.	0057	0046	80.70	0
000584087	ACT	LU1	0015-2 PCT.	0374	0023	6.15	0
000584087	ACT	LU2	0075-3 PCT.	0394	0031	7.87	0
000584087	ACT	TE1	0015-2 PCT.	0230	0032	13.91	2
000584087	ACT	TE2	0075-3 PCT.	0327	0039	11.93	0

REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104
EXPERIMENT 517005 DETECTOR TA1537 SPECIES ICRFLO/MOUSE PROJECT 02468 DATE - 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	A-C		DMSO	1020	0088	8.63	2
000584087	ACT	LI1	0015-2 PCT.	0316	0030	9.49	2
000584087	ACT	LI2	0075-3 PCT.	0402	0035	8.71	2

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REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 512802 DETECTOR TA1538 SPECIES ICRFLO/MOUSE DATE - 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	A+C		AAF 800 UG/ML	0762	0138	18.11	0
	A+T		***NO MATCH***	0206	0029	14.08	2
	A-C		DMSO	0489	0039	7.98	0
	ACP	LI	AAF 800 UG/ML	0304	0194	63.82	2
	ACP	LU	AAF 800 UG/ML	0429	0068	15.85	0
	ACP	TE	AAF 800 UG/ML	0446	0075	16.82	0
000584087	ACT	LI1	0015-2 PCT.	0391	0035	8.95	2
000584087	ACT	LI2	0075-3 PCT.	0401	0043	10.72	2
000584087	ACT	LU1	0015-2 PCT.	0514	0045	8.75	0
000584087	ACT	LU2	0075-3 PCT.	0632	0036	5.70	0
000584087	ACT	TE1	0015-2 PCT.	0506	0043	8.50	0
000584087	ACT	TE2	0075-3 PCT.	0583	0044	7.55	0

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REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104
EXPERIMENT 515505 DETECTOR 0000D4 SPECIES ICRFLO/MOUSE PROJECT 02468 DATE - 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+4	MUT1 EP+1	MUT2 EP+1	FREQ1 EP-5	FREQ2 EP-5	CONTAM
	A+C		DMN 90 UM/ML	0660	0014	0010	2.12	1.52	0
	A+T		***NO MATCH***	0765	0024	0039	3.14	5.10	2
	A-C		SALINE	0722	0021	0006	2.91	0.83	0
	ACP	LI	DMN 90 UM/ML	0608	0026	0032	4.28	5.26	0
	ACP	LU	DMN 90 UM/ML	0557	0016	0017	2.87	3.05	4
	ACP	TE	DMN 90 UM/ML	0739	0029	0005	3.92	0.68	4
000584087	ACT	LI1	0014-1 PCT.	0671	0021	0006	3.13	0.89	2
000584087	ACT	LI2	0007-1 PCT.	0922	0023	0009	2.49	0.98	0
000584087	ACT	LU1	0014-1 PCT.	0483	0010	0002	2.07	0.41	0
000584087	ACT	LU2	0007-1 PCT.	0537	0016	0011	2.98	2.05	0
000584087	ACT	TE1	0014-1 PCT.	0488	0015	0010	3.07	2.05	0
000584087	ACT	TE2	0007-1 PCT.	0766	0021	0010	2.74	1.31	0

REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 513302 DETECTOR TA1535 SPECIES SPRDAW/RAT DATE - 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	A+C		DMN 50 UM/ML	0815	0023	2.82	0
	A+T		***NO MATCH***	0150	0031	20.67	2
	A-C		SALINE	0991	0033	3.33	0
	ACP	LI	DMN 50 UM/ML	0166	1360	819.28	0
	ACP	LU	DMN 50 UM/ML	0220	0017	7.73	2
	ACP	TE	DMN 50 UM/ML	0163	0005	3.07	2
000584087	ACT	LI1	0015-2 PCT.	0278	0004	1.44	2
000584087	ACT	LI2	0075-3 PCT.	0307	0008	2.61	2
000584087	ACT	LU1	0015-2 PCT.	0403	0024	5.96	0
000584087	ACT	LU2	0075-3 PCT.	0357	0017	4.76	0
000584087	ACT	TE1	0015-2 PCT.	0466	0027	5.79	2
000584087	ACT	TE2	0075-3 PCT.	0254	0021	8.27	2

REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 517102 DETECTOR TA1537 SPECIES SPRDAW/RAT DATE - 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	A+C		AAF 800 UG/ML	1425	0076	5.33	0
	A+T		***NO MATCH***	0600	0057	9.50	0
	A-C		DMSO	0785	0038	4.84	0
	ACP	LI	AAF 800 UG/ML	0999	0197	19.72	0
	ACP	LU	AAF 800 UG/ML	0804	0109	13.56	0
	ACP	TE	AAF 800 UG/ML	1073	0108	10.07	0
000584087	ACT	LI1	0015-2 PCT.	0592	0059	9.97	0
000584087	ACT	LI2	0075-3 PCT.	0754	0067	8.89	0
000584087	ACT	LU1	0015-2 PCT.	2446	0053	2.17	2
000584087	ACT	LU2	0075-3 PCT.	0601	0046	7.65	2
000584087	ACT	TE1	0015-2 PCT.	0840	0062	7.38	3
000584087	ACT	TE2	0075-3 PCT.	0681	0066	9.69	2

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REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 514702 DETECTOR TA1538 SPECIES SPRDAW/RAT DATE - 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	A+C		AAF 800 UG/ML	0993	0037	3.73	0
	A+T		***NO MATCH***	0468	0029	6.20	0
	A-C		DMSO	1036	0043	4.15	0
	ACP	LI	AAF 800 UG/ML	0820	0314	38.29	0
	ACP	LU	AAF 800 UG/ML	1071	0062	5.79	0
	ACP	TE	AAF 800 UG/ML	0814	0046	5.65	0
000584087	ACT	LI1	0015-2 PCT.	0427	0035	8.20	2
000584087	ACT	LI2	0075-3 PCT.	0454	0035	7.71	2
000584087	ACT	LU1	0015-2 PCT.	0737	0063	8.55	2
000584087	ACT	LU2	0075-3 PCT.	0636	0056	8.81	2
000584087	ACT	TE1	0015-2 PCT.	0604	0059	9.77	2
000584087	ACT	TE2	0075-3 PCT.	0958	0059	6.16	2

REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 513202 DETECTOR 0000D4 SPECIES SPRDAW/RAT DATE - 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+4	MUT1 EP+1	MUT2 EP+1	FREQ1 EP-5	FREQ2 EP-5	CONTAM
	A+C		DMN 90 UM/ML	0606	0009	0015	1.49	2.48	0
	A+T		***NO MATCH***	0576	0022	0021	3.82	3.65	6
	A-C		SALINE	0622	0010	0012	1.61	1.93	1
	ACP	LI	DMN 90 UM/ML	0690	0029	0028	4.20	4.06	4
	ACP	LU	DMN 90 UM/ML	0495	0027	0016	5.45	3.23	0
	ACP	TE	DMN 90 UM/ML	0635	0026	0010	4.09	1.57	6
000584087	ACT	LI1	0014-1 PCT.	0552	0010	0005	1.81	0.91	0
000584087	ACT	LI2	0007-1 PCT.	0470	0042	0014	8.94	2.98	4
000584087	ACT	LU1	0014-1 PCT.	0543	0018	0007	3.31	1.29	1
000584087	ACT	LU2	0007-1 PCT.	0582	0036	0007	6.19	1.20	0
000584087	ACT	TE1	0014-1 PCT.	0527	0013	0006	2.47	1.14	0
000584087	ACT	TE2	0007-1 PCT.	0488	0005	0010	1.02	2.05	1

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REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 512707 DETECTOR TA1535 SPECIES RHESUS/MONKEY DATE - 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	A+C		DMN 50 UM/ML	0311	0056	18.01	0
	A+T		***NO MATCH***	0144	0022	15.28	0
	A-C		SALINE	0414	0042	10.14	0
	ACP	LI	DMN 50 UM/ML	0360	2421	672.50	2
	ACP	LU	DMN 50 UM/ML	0143	0029	20.28	0
	ACP	TE	DMN 50 UM/ML	0321	0031	9.66	2
000584087	ACT	LI1	0015-2 PCT.	0276	0047	17.03	0
000584087	ACT	LI2	0075-3 PCT.	0284	0039	13.73	1
000584087	ACT	LU1	0015-2 PCT.	0396	0031	7.83	0
000584087	ACT	LU2	0075-3 PCT.	0332	0036	10.84	0
000584087	ACT	TE1	0015-2 PCT.	0312	0052	16.67	0
000584087	ACT	TE2	0075-3 PCT.	0297	0029	9.76	0

REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 515303 DETECTOR TA1537 SPECIES RHESUS/MONKEY DATE = 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	A+C		AAF 800 UG/ML	0721	0071	9.85	0
	A+T		***NO MATCH***	0180	0014	7.78	1
	A-C		DMSO	0767	0072	9.39	0
	ACP	LI	AAF 800 UG/ML	0119	0037	31.09	0
	ACP	LU	AAF 800 UG/ML	0278	0052	18.71	0
	ACP	TE	AAF 800 UG/ML	0293	0026	8.87	0
000584087	ACT	LI1	0015-2 PCT.	0164	0026	15.85	0
000584087	ACT	LI2	0075-3 PCT.	0134	0009	6.72	0
000584087	ACT	LU1	0015-2 PCT.	0681	0077	11.31	0
000584087	ACT	LU2	0075-3 PCT.	0462	0084	18.18	0
000584087	ACT	TE1	0015-2 PCT.	0374	0064	17.11	0
000584087	ACT	TE2	0075-3 PCT.	0515	0052	10.10	0

REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 514802 DETECTOR TA1538 SPECIES RHESUS/MONKEY DATE -- 07/08/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	A+C		AAF 800 UG/ML	0779	0090	11.55	0
	A+T		***NO MATCH***	0380	0064	16.84	1
	A-C		DMSO	0594	0065	10.94	0
	ACP	LI	AAF 800 UG/ML	0546	0340	62.27	0
	ACP	LU	AAF 800 UG/ML	1106	0067	6.06	0
	ACP	TE	AAF 800 UG/ML	0648	0125	19.29	0
000584087	ACT	LI1	0015-2 PCT.	0388	0043	11.08	0
000584087	ACT	LI2	0075-3 PCT.	0463	0054	11.66	0
000584087	ACT	LU1	0015-2 PCT.	0697	0044	6.31	0
000584087	ACT	LU2	0075-3 PCT.	0796	0047	5.90	0
000584087	ACT	TE1	0015-2 PCT.	0731	0061	8.34	0
000584087	ACT	TE2	0075-3 PCT.	0638	0057	8.93	0

Litton BIONETICS

REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 514904 DETECTOR 0000D4 SPECIES RHESUS/MONKEY DATE - 07/17/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+4	MUT1 EP+1	MUT2 EP+1	FREQ1 EP-5	FREQ2 EP-5	CONTAM
	A+C		DMN 90 UM/ML	0594	0008	0008	1.35	1.35	1
	A+T		TISSUE	0518	0012	0010	2.32	1.93	0
	A-C		SALINE	0574	0004	0001	0.70	0.17	0
	ACP	LI	DMN 90 UM/ML	0626	0048	0040	7.67	6.39	0
	ACP	LU	DMN 90 UM/ML	0716	0026	0012	3.63	1.68	0
	ACP	TE	DMN 90 UM/ML	0661	0009	0019	1.36	2.87	0
000584087	ACT	LI1	0014-1 PCT.	0609	0020	0009	3.28	1.48	0
000584087	ACT	LI2	0007-1 PCT.	0425	0006	0002	1.41	0.47	0
000584087	ACT	LU1	0014-1 PCT.	0680	0012	0007	1.76	1.03	1
000584087	ACT	LU2	0007-1 PCT.	0600	0012	0009	2.00	1.50	0
000584087	ACT	TE1	0014-1 PCT.	0712	0013	0004	1.83	0.56	0
000584087	ACT	TE2	0007-1 PCT.	0628	0024	0008	3.82	1.27	0